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TITLE: METHOD AND DEVICE FOR CONVERTING PLURAL PICTURES TO
PICTURE IN
META-DATA FORM BY COMBINING THEM

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ABSTRACT:

PROBLEM TO BE SOLVED: To obtain a method to combine plural pictures.

SOLUTION: Meta-data including a meta-data element having a merge attribute tag

is related to each picture. Proceedings to be taken with respect to corresponding meta-data elements at the time of combining pictures are described in merge attributes. This method first reads attributes of pictures (104) to discriminate proceedings and then combines meta-data elements of pictures in accordance with these proceedings (106). This method converts pictures in another implementation form.

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DOCUMENT-IDENTIFIER: US 20020152462 A1

TITLE: Method and apparatus for a frame work for
structured overlay of real
time graphics

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[0029] FIG. 4 is a flow diagram of one embodiment for the generation of a composite broadcast signal. In operation 50, the broadcaster defines a specific region for overlaying each of the assets on the video feed. In one embodiment, regions are defined using meta data and the assets displayed are associated with a defined region using meta tags. A meta tag is a tag (a coding statement) used in a markup language such as Virtual Reality Markup Language (VRML), that describes some aspect of the contents of the corresponding data. Meta tags are used to define meta data. In the most general terms, meta data is information about a document. In one embodiment, the broadcaster defines regions of asset overlay by creating meta data 52, and transmitting the meta tags down stream to the receiver 23. The receiver uses the meta data to create or define particular regions or placards used for displaying assets. The broadcaster may have preferences on how the screen layout should look like. For example, the broadcaster may be using certain regions of the TV screen for the display of broadcaster-defined messages such as an advertising message or a commercial logo. In operation 54, the broadcaster creates assets 44 that may be overlaid on the elementary video feed. The created assets may include such information as performance data for individual racecars. Sensors located on each racecar

gather the information necessary to generate the assets and the broadcaster compiles all the sensor data and transmits the information down stream to the viewer. In an alternative embodiment, the graphics associated with each set of assets may be rendered by the presentation engine 32 residing on the receiver 23. In operation 58, the broadcaster creates meta tags 60 that associate the assets 44 to the region definitions. The meta tags 60 convey additional information about the assets to be rendered. This may include data used by the composition engine 32 to display particular assets in the corresponding defined regions. The resulting output of operation 58 is the creation of meta tags 60. In operation 62, the broadcaster transmits the elementary AV signal along with the meta data 52 used for region definition, the assets created 44 and the corresponding meta tags 60 to the receiver over satellite or broadband. In the present example, the video/data transmission is based on the ATSC standard. However, it would be appreciated by one skilled in the art that many other standards allowing for the transmission of the combined AV/data signal may be used.

[0030] FIG. 5 is a diagram of one embodiment for the recovery of a composite broadcast signal illustration of the data flow on the receiver side. In operation 64, the presentation engine 32 residing on the receiver 23 receives the meta data 52 for region definition, meta tags 60 for assets definition, and association to the defined regions, and the assets 44 to be overlaid on the elementary video feed. As referred to here, an asset 44 refers to a camera's view of an activity related to the broadcast event. A broadcast event may be covered by multiple camera views and thus multiple assets

may be available for display on the viewer television screen, based on the viewer's selections. Furthermore, meta data 52 may be used by the broadcasters to define the display regions 42, whereas meta tags 60 may be used to associate a particular asset 44 with a particular display region 42. In operation 68, the meta data for regions definitions and meta tags for assets definitions are used to determine corresponding broadcaster defined region of display for each asset. In operation 70, the presentation engine 32 accepts the user preferences 65 as inputs in order to determine which assets to display. Since the ultimate goal of DTV is interactivity, once the enhancements are under the control of the viewer, it is essential to make these accessible through an intuitive interface. Television is typically a very passive experience and consumer acceptance will fall off as the interface strays from the simple button press on a remote control. Web-based content typically involves a mouse-driven cursor that can point to an arbitrary region of the screen and thus declarative representation languages such as VRML includes a Touch-Sensor node. However, in one embodiment, interactive television applications are driven by a ButtonSensor node which is adapted to accept input from devices such as a TV remote control. The buttons on the input devices such as PC keyboards, remote controls, game controller pad, etc. trigger this node. Below is an example of one ButtonSensor declaration:

[0036] FIG. 7 is one embodiment for representative region definition layout for possible overlaying of assets on the live video feed. The background scene 76 is rendered using the elementary video feed 41. Overlaid on top of the AV feed 41, the meta data 52 are used to define each region used

for the display of the

assets 44 and meta tags 60 are used to correspond each defined region to a particular asset. Two or more assets may share a window or defined region.

The meta tags 60 definition shown below is an illustrative example of how meta tags may be used to associate an asset with a particular region definition. In this example meta tags 60 for three of the assets of FIG. 8 are shown.